

WHAT IS CLAIMED IS:

1. A fuel cell control system comprising:

a first converter electrically connected to an electric power system through a circuit-breaker means;

5 a set of fuel cells connected to the DC circuit of said converter through a second converter;

a secondary battery connected to said DC circuit through a third converter;

a current detecting means which detects AC
10 currents from said converters and outputs their detected values;

a voltage detecting means which detects an AC voltage on the power system side of said circuit breaker means and outputs its detected value;

15 a fuel cell current detecting means which detects a current from said fuel cell set;

a fuel cell voltage detecting means which detects the voltage of said fuel cell set;

a secondary battery current detecting means which
20 detects a current from said secondary battery; and

a secondary battery voltage detecting means which detects the voltage of said secondary battery;

wherein said electric power system is equipped with a receiving current detector which detects the
25 total of a current flowing through said first

converter and a current flowing through an electric load connected in parallel with said first converter.

2. A fuel cell control system comprising:

a first converter electrically connected to an electric power system through a circuit-breaker means;

a set of fuel cells connected to the DC circuit of said converter through a second converter;

a secondary battery connected to said DC circuit through a third converter;

a current detecting means which detects AC currents from said converters and outputs their detected values;

a voltage detecting means which detects an AC voltage on the power system side of said circuit breaker means and outputs its detected value;

a fuel cell current detecting means which detects a current from said fuel cell set;

a fuel cell voltage detecting means which detects the voltage of said fuel cell set;

a secondary battery current detecting means which detects a current from said secondary battery; and

a secondary battery voltage detecting means which detects the voltage of said secondary battery;

wherein said fuel cell system control unit further comprises

a receiving current detector which detects the total of a current flowing through said first converter and a current flowing through an electric load connected in parallel with said first converter;

5 a first power calculating means which calculates a receiving power from a receiving current detected by said receiving current detector and a system voltage detected by said system voltage detecting means;

10 a second power calculating means which calculates a power from said first converter; and

a means which calculates a power consumed by said load from the outputs of said first and second power calculating means.

15 3. The fuel cell system control unit of claim 1, further comprising:

a voltage regulating means which feeds back a DC voltage value detected by said first converter and outputs a current command value so that the product of the fed-back DC voltage value by the current command value may be equal to the power command value;

20 an automatic current regulator which feeds back said detected DC voltage value and outputs an output voltage command value to make the current equal to said current command value;

25 a pulse width modulation (PWM) means which

receives said output voltage command value and outputs pulses to drive the converter; and

a control unit which controls charging and discharging of the power system and power according to said voltage command value.

4. The fuel cell control system according to claim 1 wherein

a means for controlling said second converter has a current control means to make the current command value equal to the current of the fuel cell; and

a means for controlling said third converter has a current control means to make the current command value equal to the current of the secondary battery.

5. The fuel cell control system according to claim 1, further comprising a means which calculates a current command value output by the fuel cells from said detected load power value to make power output by said second converter approximately equal to said load power.

6. The fuel cell control system according to claim 1, wherein said control means comprises a means for calculating average values from said detected load power values.

7. The fuel cell control system according to claim 1, wherein the means for controlling said third

converter comprises a means to cause the secondary battery to output power when said receiving power due to the increase of said load power exceeds the preset receiving power value.